

Remarks

Claims 1-19 were pending.
Claims 2 and 13 are amended.
Claim 10 is original.
Claims 1, 3-9, 12 and 14-19 are as previously presented.
Claim 11 is cancelled.
Claim 20 is new.
The application now contains claims 1-10 and 12-20.

Claim 2 is amended for clarity by deleting the material from immediately after the word "with" in line 2 up to the first occurrence of the word "lithium" in line 6, inserting the phrase "in a solvent" after the second occurrence of the word "lithium" in line 6 and deleting all the material thereafter. The deleted material prior to line 6 relates to subject matter that does not specifically relate to a process step and may cause confusion, the deleted material after line 6 is redundant as it does not add to the material of claim 1, and the inserted phrase is merely moved from the second to the sixth line.

Claim 13 is amended for clarity by inserting the phrase "the acylphosphane of formula (I) to prepare acylphosphane oxides" after the word "oxidizing" in line 2 and by deleting "acylphosphane oxides and" which appears after the phrase "sulfur to prepare". Support is inherent in the claim and found on page 16 of the specification.

Claim 20 is added to reclaim material from now deleted claim 11. Support is found in original claim 11, claim 1 and in the specification on page 13, lines 12-18.

No new matter is added.

Rejections

Claims 1-19 are rejected under 35 USC 112 because the words metallation and reduction are considered redundant.

Applicants respectfully point out that dependent claims such as 2, 5 and 6 refer to, for example, the metallation process of claim 1. The terms metallation and reduction are placed in claim 1 (consistent with the specification) to provide antecedence basis for this subsequent shorthand so as to avoid cumbersome wording in subsequent claims.

Applicants therefore respectfully ask that the Examiner agree to leaving the terms in claim 1 and withdraw the 35 USC 112 rejections based on the presence of the words metallation and reduction.

Claim 2 is rejected under 35 USC 112 as it is unclear how the structure R₁P is a cyclic phosphane.

Applicants respectfully point out that the cyclic phosphane is of the structure (R₁P)_n, wherein n is at least 3 or higher. The cyclic phosphane is then a ring made up of 3 or more connected phosphorous atoms each of which is substituted by a group R₁. Applicants have deleted this language as it describes chemical mechanisms inherent in the process and does little to clarify the actual physical process steps of the claim.

Applicants therefore respectfully ask that the Examiner withdraw the 35 USC 112 rejections of claim 2.

Claim 11 is rejected under 35 USC 112 as it is unclear how the diphosphanes or polyphosphanes correspond to the structure of formula I in claim 1.

Claim 11 has been cancelled and rewritten as independent claim 20 which uses the same general processing steps of claim 1, i.e., metallation, reduction and subsequent alkylation or acylation of the diphosphanes or polyphosphanes of claim 11. The diphosphanes or polyphosphanes of claim 11 are similar to the starting compounds of formula IIa of claim 1, but upon further examination it does appear that the formulae (R₁)₂-P-P(R₁)₂ or [R₁P]_n, wherein n is ≥ 3 are not in fact encompassed by formula IIa of claim 1.

Applicants respectfully submit that independent claim 20 is fully supported as described above and kindly ask that the Examiner withdraw the rejections of claim 11 as they might apply to claim 20.

Claim 13 is rejected under 35 USC 112 as it is unclear how the acylphosphine oxides are prepared by reaction with sulfur. Claim 13 has been amended to make clear that the acylphosphane of formula (I) is either oxidized to an acylphosphane oxide or reacted with sulfur.

Applicants respectfully submit that the rejections of claim 13 under 35 USC 112 are overcome and kindly ask that they be withdrawn.

Claims 1, 2 and 8 are rejected under 35 USC 103(a) over Veits, et. Al., Russian Journal of General Chemistry (2000), 70(8), 1237-1239.

Applicants respectfully traverse the rejections.

The instant process uses specifically a metal in a solid or molten form, as detailed for example, page 12, lines 6-10 of the specification or the working examples which use lumps of sodium. While catalytic amounts of metal hydroxides or alkoxylates may also be added, these are merely catalysts added in small "catalytic amounts". The instant process is not merely a generic metallation and reduction, but a specific process using specifically a metal as opposed to a metallic derivative.

Veits uses either an inorganic metal salt, that is the powerful reducing hydride LiAlH_4 , or an organo-metallic compound, the strong base BuLi .

Veits does not disclose a metal such as solid or molten lithium, sodium, potassium etc as found in the instant invention and the processes and reaction conditions of the two disclosures are not similar.

Applicants therefore respectfully submit that there is no basis for a 35 USC 103(a) rejection of the instant claims over Veits and kindly ask that the rejections be withdrawn.

Claims 1-8 are provisionally rejected for non-statutory obviousness-type double patenting over US Pat Appl No 11/795059. Claims 1-19 are provisionally rejected for non-statutory obviousness-type double patenting over US Pat Appl No 11/667780.

Applicants respectfully traverse the rejections.

The instant process starts by metallation of an organic phosphorous compound with a solid or molten metal. The metal is not a catalyst, e.g., page 12 lines 6-10 of the specification.

US Pat Appl No 11/795059 starts instead with hydrogenation of an organo phosphorous chloride. Applicants respectfully aver that the catalytic hydrogenation of 11/795059 is well known to be different chemistry entirely from the metallation of the instant invention.

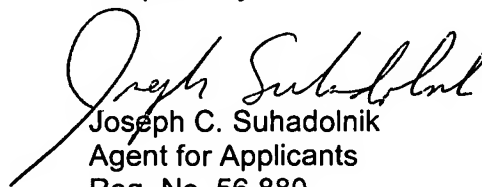
US Pat Appl No 11/667780 starts with the metal reduction of elemental phosphorous or the inorganic PCl_3 , either of which have different properties and require different handling than the instant organic phosphorous starting compounds.

Applicants respectfully maintain that the reactions disclosed as the first step in either 11/795059 or 11/667780 differ significantly from the instant process either in starting materials, reactants and/or reaction conditions and kindly ask that the rejections for non-statutory obviousness-type double patenting over US Pat Appl No 11/795059.

Applicants believe that the reactions and physical processing steps comprising the first steps in the method of each of the cited pieces of art are significantly different from the first step of the instant invention which uses specifically elemental metal, as discussed above. If the Examiner disagrees. Applicants respectfully ask that the reasoning for finding similarity be provided.

Applicants respectfully submit that all rejections are addressed and are overcome and kindly ask that they be withdrawn and that the claims 1-10 and 12-20 be found allowable. In the event that minor amendments will further prosecution, Applicants request that the examiner contact the undersigned representative.

Respectfully submitted,


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